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CUTTING GUIDE DEVICE FOR CIRCULAR SAWS

Background Of The Invention

Field: This invention concerns a guide device which is constructed to be affixed to any supporting structure including a workpiece itself and to the base of a hand held circular saw and which is readily adjustable to guide the saw accurately and comfortably, with one hand, to cut the workpiece of substantially any width at any of a wide degree of angles both [[thru]] through the plane of the workpiece and across the workpiece.

Prior Art: Heretofore cutting guide devices typically have been quite complex in structure, particularly for hand held circular saws, and generally have been concerned with guiding the saw blade [[thru]] through the workpiece with the cut at various angles across the workpiece. These devices have not, in themselves, provided for cuts which are other than 90° to the plane of the workpiece since hand held circular saws already are provided with means for adjusting the angle of the blade from 90° to about 45° with respect to the plane of the saw base, and hence with respect to the plane of the workpiece.

This conventional angle range, however, is insufficient for many construction purposes. Also, when guiding the saw across the workpiece, particularly across a wide workpiece such as the 4 ft. or 8 ft. dimension of plywood, and particularly where the saw blade is angled from 90° to the workpiece plane, the counter force on the blade can easily move the saw off line.

Summary Of The Invention

The present invention provides a guide device which is inexpensive, simple and lightweight in construction, is easy to use, and in a broad

structural embodiment comprises a platform means on which the base of a hand held circular saw can rest, wherein cooperating shoulder means on the platform means and saw base provide a guide for cutting on a straight line [[thru]] through a workpiece, wherein elevation means is provided on [[said]] the platform means and is provided with mounting means which is operable to fix the platform means to a supporting structure at a desired height above [[said]] the supporting structure, and wherein angle adjustment means is provided on [[said]] the elevation means for fixing the angle of [[said]] the platform means and saw base with respect to the plane of the workpiece.

It is particularly noted that the present device wherein larger circular saws are used, such as 10 in. blade, the angle of cut which is afforded [[thru]] through the combination of the conventional angle setter of such saws and the present guide is very large, e.g., 70°-80° or so from the 90° vertical cut.

Brief Description Of The Drawings

The invention and its objects and advantages will be understood further from the description and drawings herein, wherein the various figures are not drawn to scale or relative proportions and are intended principally to illustrate the present inventive concepts, and wherein:

FIG. 1 is a front view of the present guide device supporting a hand held circular saw above a workpiece with the platform means and saw blade oriented at a tip angle of about 50° to the plane of the workpiece solely by the present elevation means;

FIG. 2 is a view as in Fig. 1 with the tip angle at about 35° by use of the conventional angle setter of a hand held circular saw in combination with the present elevation means set at the 50° tip angle of Fig. 1;

FIG. 3 is a top down view of Fig. 1 with the saw motor and blade removed from the saw base and with structural portions broken away for clarity;

FIG. 4 is a view taken along line 4-4 in Fig. 3 and showing a variation in the mounting means for the guide device;

FIG. 5 is an end view of a portion of the platform and elevation means taken along line 5-5 in Fig. 4;

FIG. 6 is a partially cross-sectioned view taken generally along line 4-4 in Fig. 3 and showing a width adjustment structure for the guide device;

FIG. 7 is a cross-sectional view of the attachment means for the guide bar taken along line 7-7 in Fig. 3;

FIG. 8 is a cross-sectional view taken along line 8-8 in Fig. 7;

FIG. 9 is a view as in Fig. 7 showing a variation in the guide bar attachment means; and

FIG. 10 is a view as in Fig. 3 showing a workpiece set up for an angular cut across the workpiece.

Detailed Description

Referring to the drawings and with particular reference to the claims herein, the present guide device which can be of any material such as, for example, wood, plastic or aluminum, comprises the platform means generally designated 10 having a top portion 11 with a substantially planar top surface 12, opposed sides 14,16 and opposed front 18 and back 20 ends and having a longitudinal dimension 22 and a lateral dimension 24. This lateral dimension comprises a lateral axis generally designated 25 which

extends laterally of [[said]] the platform means at any point along the longitudinal dimension of [[said]] the platform means. In use, when the circular saw is mounted on the platform, it will be apparent that the plane 27 of the saw blade 29 is always oriented parallel to [[said]] the lateral axis 25.

A first guide shoulder means 26 is provided on the platform means and extends along [[said]] the lateral axis 25 and downwardly from the top surface 12. Should means 26 comprises one or more slots 13 formed [[thru]] through [[said]] the surface 12 along [[said]] the lateral axis 25. Multiple slots 13 will accommodate a variety of saw base dimensions. The depth of the slots can be varied, depending on the thickness of top the portion 11, but it is preferred to have a depth of at least about 0.25 in. such that the second guide shoulder means (hereinafter described) on the saw base cannot be dislodged easily from said slot 13 by the normal pushing action of the operator against the saw handle 15. It is noted that the shoulder means 26 can also comprise the back end 20 of the platform means.

The platform means 10 has a pair of longitudinally spaced cooperating elevation flanges 28,30 extending downwardly from the top portion 11 and which are provided with clamping means generally designated 32 for affixing the device to [[a]] the supporting structure 34. The flat inner surface (51) of said flanges serve as guides for the workpieces (43) as shown in Fig. 6.

In use, the first guide shoulder means 26 is normally oriented laterally of the workpiece or other supporting structure 34 but may be angled across the workpiece as shown as 43 in Fig. 10 along with the rest of the device and the saw mounted thereon such that, e.g., compound angled cuts can be made [[thru]] through the workpiece. For this embodiment, suitable guide fences such as 42 may be temporarily fixed to the supporting structure 34 such as

an elongated work bench or saw table. The top portion 11 can be set at a prescribed height above and at a prescribed angle α to the plane 35 of the supporting structure by way of the clamping means 32 tightened [[thru]] through slots 33 formed [[thru]] through end flange 28, 30 against the edges of the supporting structure 34. The first guide shoulder means 26 is adapted to engage second guide shoulder means 36 on the base 38 of the saw for guiding the saw in a straight line generally laterally or at an angle across [[a]] the workpiece.

The clamping means structure 32 can be widely varied and includes, for example, screws or the equivalent mounted [[thru]] through the slots 33 and screwed into the edge portions 31 of the supporting structure, or threaded rods 37 with clamp member 39 and wing nuts 40, or simply any of a large variety of speed clamps or the like which are readily available in varying lengths.

The second guide shoulder means 36 is preferably provided by a slide bar 41 adapted to slidably fit into the slots 13, preferably with less than about 0.04 in. side clearance to minimize sideways runout of the saw blade. This bar can be affixed to the saw base 38 in any convenient and removable manner and includes the conventional guide attachment means provided on most hand held circular saws and shown in Figs. 7 and 8. Such attachment means comprises a cut-out raised portion 44 on the saw base 38 [[thru]] through which an arm member 46 is affixed at one end of the slide bar 41 by screws or the like and at its other end is affixed to the saw base by tightening a set screw 48, which is threaded [[thru]] through the portion 44, against the upper surface of the arm member 46.

The type of circular saw to which the present invention is applicable is a convention one as shown in the drawings as comprising a base (38)

having a planar slide surface (52) and having a disc shaped cutting blade (29) mounted on a drive shaft (54) of an electric motor (56) and lying in a variable cutting plane (27), wherein the motor, with of course said blade attached, is pivotally mounted on the base for angular adjustment with respect to the base to orient cutting plane (27) with respect to the slide surface (52) at an angle of between about 90° and about 45°. In order to adapt the saw for use in the present invention the slide bar (41) is removably affixed to the saw base along the back edge (55) thereof as described above.

A variation of the attachment means is shown in Fig. 9 wherein a screw or bolt 50 is countersunk in the underside of the saw base 38 and is mounted [[thru]] through arm member 46 for tightening 46 against the base 38 and holding the bar 41 in place on the base.

Referring to Figs. 5 and 6, the present device is provided with one or more a width adjustment means longitudinally spaced on one of the [[an]] elevation flange flanges and operable for accommodating different width supporting structures. [[Each]] The [[such]] adjustment means comprises a T shaped slot 45 formed in the top portion 11 along the lateral axis 25, [[thru]] through which a complementary follower 47 is slidable. This follower is affixed to the top of [[one of]] the elevation flanges flange by a threaded stud 49 or the equivalent. This flange is thus movable axially laterally toward or away from the opposite flange to accommodate a particular width of the supporting structure. With such width adjustment means, the present device is adaptable for mounting on narrow saw tables used, for example, for cutting planks or the like, or on wide tables used for cutting wide workpieces such as sheets of plywood.

This invention has been described in detail with particular reference to preferred embodiments thereof, but it will be understood that variations and modifications will be affected within the spirit and scope of the invention.

ABSTRACT OF THE DISCLOSURE

A guide device for a hand held circular saw having a base, the device having a platform on which the base of a hand held circular saw can rest, wherein cooperating shoulders on the platform [[means]] and saw base provide a guide for cutting on a straight line [[thru]] through a workpiece, wherein elevation flanges are provided on the sides of the platform and are provided with mounting structure which is operable to fix the platform to a supporting structure at a desired height above the workpiece, and wherein angle adjustment structure is provided on the elevation flanges for a fixing the angle of the platform and saw base with respect to the surface of the workpiece.